

## ASTRONOMY

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### PROGRAM

- Associate of Science (A.S.)

#### DESCRIPTION

The Astronomy program introduces students to the physical properties and processes that govern celestial bodies in the Universe. Students may take astronomy courses to satisfy their physical science requirements or to transfer to the university with a major in astronomy/astrophysics or double major in astronomy and physics. Transfer level astronomy curricula stress very strong preparation in physics and mathematics. While most astronomy courses will be taken at the upper division or graduate level, exposure to lower division astronomy courses will assist in exploring the major. Students planning to transfer may need to complete additional coursework and/or select specific electives required by the transfer institution and should consult with a Hartnell College counselor to identify required courses at their target university.

Students who complete a B.S. degree in astronomy will be qualified to enter a teaching credential program, operate a planetarium, and assist at an observatory. With an M.S. degree, students can teach astronomy or physics at a community college, be a telescope operator at a major observatory, or work in industry. A Ph.D. qualifies students for a career in research at a university, space agency, or observatory.

#### LEADS TO CAREER OPPORTUNITIES SUCH AS:

- Astronomer
- Astronomy/Physics Professor
- Astrophysicist
- Observatory Director
- Planetarium Director
- Research Scientist
- Science Teacher



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#### TRANSFER PREPARATION

Courses that fulfill major requirements for an associate degree may differ from those needed to prepare for transfer. Students who plan to transfer to a four-year college or university should schedule an appointment with a Hartnell College counselor to develop a student education plan before beginning their program.

#### TRANSFER RESOURCES

www.ASSIST.org – CSU and UC Articulation Agreements and Major Search Engine

CSU System Information -  
<http://www2.calstate.edu>

#### FINANCIAL AID

Paying for the cost of a college education requires a partnership among parents, students and the college. As the cost of higher education continues to rise we want you to know that Hartnell College offers a full array of financial aid programs, federal loan programs, and fee waivers.

<https://www.hartnell.edu/students/fa/net-price-calculator.html>

# ASTRONOMY (AS.AST)

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## ASSOCIATE OF SCIENCE

**Program Outcomes:** Upon successful completion of this program a student will be able to:

- explain basic astronomical phenomena and why they occur.
- apply the laws of physics and solve mathematical problems to explain the physical properties and processes that govern celestial bodies in the Universe.
- explain and discuss the impact and history of scientific theories.
- demonstrate proficiency in applying scientific procedures for making observations, measurements, and calculations typical of modern scientific research.

### Required Major Courses (34 units)

<input type="checkbox"/> AST-1 – Introduction to Astronomy	3.0
<input type="checkbox"/> AST-1L – Astronomy Laboratory	1.0
<input type="checkbox"/> PHY-4A – General Physics I/Mechanics	4.0
<input type="checkbox"/> PHY-4B – General Physics II/Electricity and Magnetism	4.0
<input type="checkbox"/> PHY-4C – General Physics III/ Waves, Heat and Modern Physics	4.0
<input type="checkbox"/> MAT-3A – Analytic Geometry and Calculus I	4.0
<input type="checkbox"/> MAT-3B – Analytic Geometry and Calculus II	4.0
<input type="checkbox"/> MAT-3C – Analytic Geometry and Calculus III	4.0
<input type="checkbox"/> MAT-4 – Linear Algebra	3.0
<input type="checkbox"/> MAT-5 – Differential Equations	3.0

### Major Electives (Complete 1 course – 4-5 units)

<input type="checkbox"/> CHM-1A – General Chemistry I	5.0
<input type="checkbox"/> CSS-1 – Introduction to Computer Science and Programming	4.0
<input type="checkbox"/> CSS-4 – Introduction to Scientific Programming	4.0

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**SUBTOTAL: 38-39 UNITS**

### General Education – Required Courses

*Students must complete one of the following General Education Plans:*

**CSU-GE (see page 72) 39 units**

**IGETC (see page 74) 37 units**

*Students can double-count required courses and courses for General Education*

■ **Electives (Courses Numbered 1-199) required when degree units plus GE units total fewer than 60.**

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**TOTAL: 60 ≤ UNITS**